

I, Ryan Macias, of Dallas, Texas declare under penalty of perjury that the following statements are true and correct:

1. I am over 18 years of age, of sound mind, and otherwise competent to make this Affidavit, which I submit in support of the Plaintiffs in Kim v. Hanlon, Civ. A. No. 24-cv-1098.

EXPERT CREDENTIALS AND QUALIFICATIONS

2. I am the owner of RSM Election Solutions LLC, an election technology and cybersecurity consulting and advising company organized in Washington, D.C., registered as a foreign LLC in Texas, and operating out of Dallas, Texas. RSM Elections Solutions LLC's core principle is Resiliency in the election infrastructure = Securing election technology + Mitigating risk to the democratic process.

3. A true and correct copy of my current curriculum vitae is attached hereto as Appendix 1.

4. I am a subject matter expert with over 18 years of experience in election technology, security, and policy. In this capacity, I have developed strategies and advised the election community, including federal, state, local, and territorial governments, on ways to build resilience into the election infrastructure. I engage directly with election officials to identify risks to the

election infrastructure and election processes, as well as to highlight mitigative measures, compensating controls, and best practices that election officials and private sector partners can implement to manage those risks.

5. I have also served as a consultant and strategic advisor to Idaho National Laboratories, a federally funded research and development center, where I helped develop the methodology for the critical product evaluation (CPE) program. The CPE program is a comprehensive cybersecurity evaluation of infrastructure assets—including election infrastructure—aimed at identifying vulnerabilities and indicators of compromise (i.e., signs of previous breaches) for purposes of improving the national resiliency of critical infrastructure.

6. Further, I, as RSM Election Solutions LLC., have worked for certification authorities, such as Secretaries of State and Voting System Examiner Committees to test voting equipment as well as to advise and train the entities in charge of testing the voting equipment. This includes many versions of the ES&S Voting System (EVS) including, but not limited, to EVS 6.3.0.0 and 6.2.0.0, the versions used in New Jersey, as well as Dominion Democracy Suite voting systems.

7. Previously, I was the Acting Director of the U.S. Election

Assistance Commission (EAC) Voting System Testing and Certification Program where I led the modernization of the Voluntary Voting System Guidelines (VVSG), version 2.0.¹ The EAC is the federal agency legally responsible for testing and certification of voting systems used in federal elections and for accrediting voting system testing laboratories (“VSTLs”).² A primary purpose of the VVSG is to ensure all voting systems used in U.S. elections are secure, accurate, reliable, and accessible. I developed the 17-Functions process model that defined the scope of the VVSG 2.0,³ allowing non-traditional election technologies to be tested to the same requirements as traditional voting systems. In my role as Acting Director, I also managed multiple voting system applications and testing campaigns, including with respect to the ES&S Voting Systems and Dominion Democracy Suite Voting Systems. In addition, as a Lead Auditor for International Standards

¹ EAC, VVSG Version 2.0 (Feb. 10, 2021), https://www.eac.gov/sites/default/files/TestingCertification/Voluntary_Voting_System_Guidelines_Version_2_0.pdf.

² The EAC was established by the Help America Vote Act of 2002 (HAVA). The EAC is an independent, bipartisan commission charged with developing guidance to meet HAVA requirements, adopting voluntary voting system guidelines, and serving as a national clearinghouse of information on election administration. The EAC also accredits testing laboratories and certifies voting systems, as well as audits the use of HAVA funds. See <https://www.eac.gov/about>.

³ [https://www.eac.gov/sites/default/files/eac_assets/1/6/VVSGv_2_0_Scope-Structure\(DRAFTv_8\).pdf](https://www.eac.gov/sites/default/files/eac_assets/1/6/VVSGv_2_0_Scope-Structure(DRAFTv_8).pdf)

Organization (ISO) 9001 Quality Management Systems and ISO/IEC 17025

Testing and Calibration Laboratories, I performed audits and inspections of federally accredited voting systems testing laboratories and registered voting system manufacturers.

8. Before stepping into the Acting Director position, I served as the Senior Election Technology Program Specialist at the EAC for three years. In that position, I engineered a new strategic approach to federal certification of voting systems. This approach restructured internal policies, processes, and procedures, focusing on auditing and conformance to international standards for security, quality assurance, and configuration management. In addition, I served as the Project Manager for federal voting system certification, where I analyzed voting systems to determine conformance with federal requirements, policies, and procedures. I also developed nationally recognized publications and trainings on the best practices for securing, procuring, and implementing election technology—many of which have been referenced in technical or policy-related publications—and implemented a risk-based approach to identify and analyze current threats and challenges in election technology, particularly regarding physical security, cybersecurity, and information operations.

9. Before joining the EAC, I spent ten years with the California Secretary of State's Office, developing and implementing legislation, policies, and procedures regarding election technology and security. My responsibilities included serving as the technology lead on election technology and security legislation, such as Senate Bill (SB) 360,⁴ which overhauled the voting system testing and certification processes, and SB439,⁵ which required the Secretary of State to certify election technologies beyond voting systems, to include elements such as electronic pollbooks and ballot-on-demand systems.

10. I have been retained to offer written analysis, and potentially expert testimony, regarding the technological capabilities and functionality of the voting systems in use in New Jersey, including the software, firmware used for designing and laying out the ballots used for in-person and vote by mail. This includes a description of the capabilities of New Jersey's voting systems and the process that election officials and/or their contractors undertake to prepare ballot definition files, lay out the ballot display, program in-person

⁴ Certification of Voting Systems, ch. 602, 2013 Cal. Legis. Serv. Ch. 602 (S.B. 360) (West).

⁵ Election Procedures, ch. 734, 2015 Cal. Legis. Serv. Ch. 602 (S.B. 439) (West).

voting equipment and upload files to printers of paper ballots. It further includes a comparison of the time, burden, and estimated cost that would have to be expended by election personnel if the court were to prohibit the use of the current “county line” ballot layout used in New Jersey primary elections.

11. In preparing this analysis, I have relied on my personal knowledge, my review of the pleadings in this matter, and my review of the other documents and communications identified herein.

12. The opinions stated below are based on my experience and expertise in election technology, security, and policy, my review of the above-described materials, and the facts discussed below.

VOTING SYSTEMS DESCRIPTION

13. According to the New Jersey Secretary of State’s website,⁶ New Jersey counties use voting systems manufactured by either Dominion Voting Systems or Election Systems and Software (ES&S). This data was crosschecked using a database entitled The Verifier,⁷ which is developed by

⁶ <https://nj.gov/state/elections/resources-voting-equipment.shtml>

⁷

<https://verifiedvoting.org/verifier/#mode/navigate/map/ppEquip/mapType/normal/year/2024>

Verified Voting, a nonprofit that tracks election technology, and is used by many experts in the field to validate data reported by election officials.

14. Dominion Voting Systems and Election Systems and Software (ES&S) manufacture multiple types of voting systems and voting devices.

15. Dominion Voting Systems has voting systems comprising the Democracy Suite Election Management System, ImageCast Precinct (ICP) scanners, ImageCast Central (ICC) scanners, and ImageCast X (ICX) voting devices.

16. ES&S has voting systems consisting of the Electionware Election Management System, DS200 scanner, DS300 scanner, DS450 scanner, DS850 scanner, DS950 scanner, ExpressVote voting device, and ExpressVote XL voting device.

17. Both voting systems are similar in that they contain an election management system (“EMS”) – or what is referred to as the “brains” of the system because it is used to design and layout paper and electronic ballots, create the electronic files needed by the scanners and voting devices, as well as aggregate and report vote results, along with other features. Further, each voting system contains scanners that tabulate paper ballots, and voting devices that contain an electronic ballot interface (i.e., a ballot displayed on a

computer screen opposed to a paper ballot) that a voter uses to make vote selections.

BALLOT LAYOUT AND DESIGN

18. The EMS, generally, is the computer software that is used for laying out and designing ballots. An election official or vendor enters the necessary data, such as contest, candidate names, precinct, and district information, etc. After inputting all the data, the election official or vendor uses the EMS to layout and design the look – or presentation – of the paper ballot and electronic ballot interface.

19. Many election officials and vendors use templates for building the ballots. Those templates may have some of the data that does not change – or changes minimally - such as districts, precincts, contests, etc. For instance, an election official may have a template for the Presidential Primary, Presidential General, Gubernatorial Primary, Gubernatorial Primary, etc. Additionally, those templates generally include information on how the ballot will display to the voter, both on paper and on screen (i.e., the location and/or text of the instructions, the title of the election, number of columns, or rows, etc.).

20. While different EMS software has different capabilities and functionality, typically, the EMS software has the ability to layout a ballot in portrait (e.g., vertically) or landscape (e.g., horizontally). Similarly, most EMS can layout an electronic ballot interface to be either portrait or landscape.

CERTIFICATION REQUIREMENTS

21. With the passage of the Help America Vote Act (HAVA) of 2002,⁸ the U.S. Election Assistance Commission (EAC) was created. One of the core duties it was charged with was being the federal agency that tests and certifies voting systems. Further, federal certification is not mandatory; states may rely upon federal certification, use portions of the federal certification process, or disregard it completely.

22. Furthermore, states typically have statutory requirements for what voting technologies and systems require certification. According to the EAC's State Requirements and the U.S. Election Assistance Commission Voting System Testing and Certification Program,⁹ New Jersey does not require federal certification. It also states that New Jersey statute requires that "No

⁸ https://www.eac.gov/sites/default/files/eac_assets/1/6/HAVA41.PDF

⁹ <https://www.eac.gov/sites/default/files/2023-08/State%20Requirements%20for%20Certification%202023.pdf>

voting device shall be used in an election in this State unless in combination with automatic tabulating equipment used to count and tabulate ballots it meets the requirements in section 3 of this act, and has been approved by the Secretary of State, or other person, agency or board charged with the examination and approval of voting machines. When such device has been approved, any improvement or change which does not impair its accuracy, efficiency, or ability to meet such requirements shall not require a reexamination or reapproval thereof. (NJ ST 19:53A-4)”

23. While New Jersey law does not require federal certification, the two ES&S voting systems certified for use in New Jersey, EVS 6.3.0.0¹⁰ and EVS 6.2.0.0,¹¹ have also obtained federal certification by the EAC.

24. Additionally, the Dominion Democracy Suite voting systems approved for use in New Jersey have been certified by the Secretary of State.¹²

¹⁰

https://www.eac.gov/sites/default/files/voting_system/files/ESS%20EVS%206300%20Certificate%20and%20Scope%20of%20Conformance.pdf

¹¹

https://www.eac.gov/sites/default/files/voting_system/files/ES%26S%20EVS%206200%20Certificate%20and%20Scope%20of%20Conformance%2012_23_21.pdf

¹² <https://nj.gov/state/elections/resources-voting-equipment.shtml>

ANALYSIS

25. There are multiple methods of voting for a voter in New Jersey to cast a ballot, including vote by mail, early in-person voting, and in-person election day voting. Regardless of method, however, a voter will be presented with one of two types of ballots: 1) a paper ballot or 2) an electronic ballot interface.

26. For purposes of this analysis, the paper ballot is defined as a sheet – or sheets - of paper with all contests and candidates printed on it and whereby a voter has the ability to mark – or select – the candidate of her/his choice.

27. Additionally, for purposes of this analysis, an electronic ballot interface displays the contests and candidates to a voter using technology. This is typically done by visually displaying the contests on a screen or audibly through headphones.

28. All voting systems certified by the Secretary of State and approved for use in New Jersey elections can generate a paper ballot, as defined above, using a traditional office-block style, as defined by the plaintiff, and as shown

on the Salem County, New Jersey 2020 General Election sample ballots¹³ without requiring the system to be re-certified or retested.

29. All voting systems certified by the Secretary of State and approved for use in New Jersey elections, can generate an electronic ballot interface, as defined above, using a traditional office-block style, as defined by the plaintiff, and as shown on the Sussex County, New Jersey June 2023 Primary Election sample ballots¹⁴ without requiring the system to be re-certified or retested.

30. While the ES&S Voting System can generate an electronic ballot interface using the traditional office-block style, there is one device, the ExpressVote XL, which is used by New Jersey counties for in-person early and/or election day voting that uses a grid-based voting template, opposed to an office-block template.

31. All voting systems, and all voting devices, can provide voters a ballot, both paper ballot and electronic ballot interface that does not use the “county line” style ballot format.

¹³ <https://amykennedyforcongress.com/wp-content/uploads/2020/09/VBMSalem.pdf>

¹⁴ <https://sussexcountyclerk.org/wp-content/uploads/2023/05/2023-June-Primary-Sample-ballots-for-web.pdf>

32. A traditional office-block style ballot by its very nature does not use the “county line” style ballot format.

33. While the grid-based ballot supports the “county line” style ballot format, it is not required. Further, a grid-based ballot style can be generated to look similar to an office-block style listing all candidates in a single column; opposed to laying candidates in a single contest across multiple columns.

34. Both Dominion and ES&S voting systems are used across the country. An overwhelming majority of states use these voting systems and/or voting devices with the traditional office-block style ballots – both paper ballots and electronic ballot interface.

35. Only a handful of states use Dominion or ES&S voting systems to generate a grid-based ballot layout. However, those states do so without the use of a “county line” style format, which is unique to the State of New Jersey. Therefore, the removal of the “county line” style format is not a limitation on the voting system, as currently certified by the Secretary of State or approved for use in New Jersey elections.

36. The “county line” style format is a much more complicated format than other ballot formats. In the more typically used office-block style, ballots are laid out using a format where the name of the candidates are grouped, or

aligned, in a single column or row beneath or alongside the contest title, respectively. Whereas the “county line” style requires that the assignment of the name of each candidate be precisely listed in a specific column and row (i.e., a specific cell on the grid). By adding multiple columns, you also increase the likelihood of error. For instance, if you have five candidates in a single row, there are only five cells for which the name can be listed. However, if you have five candidates listed across five columns, there are twenty-five cells (i.e., five rows by five columns) for which a name can be listed. Such complexity increases the chances that a name is listed in the incorrect cell.

37. Due to the complexity and likelihood of error, a ballot that does not use the current New Jersey “county line” format should take less time to program in the voting system, and more importantly take less time and resources for an election official or their vendor to conduct ballot proofing, as well as logic and accuracy testing.

38. In sum, it is technologically possible for all 21 New Jersey counties to use their existing voting systems to create an office-block template and/or for those jurisdictions that must use a grid-based template, simply adjust the numbers and treatment of the rows to display like an office-

block format. This can be done without any modifications, retesting, or recertification of the voting system.

39. Such an adjustment would require little to no difference in time or administrative burden because the systems the voting system technology, specifically the election management system, is built to support flexibility in design and layout. Additionally, the data entry of the number of candidates and number of offices can continue to - and will need to be - set up prior to the selection of the layout anyway. No technological change to the voting system software is necessary. As an analogy, illustrated below are two Figures, developed using Excel Spreadsheet to demonstrate the layout and format that can be done using the existing voting systems certified for use in the State of New Jersey.

Figure 1

OFFICE-BLOCK PRESENTATION WITH CONTESTS TO SIDE

U.S. Senate Six year term (Vote for 1).	Andy Kim <input type="radio"/> <i>(Kim Slogan)</i> Tammy Murphy <input type="radio"/> <i>(Murphy Slogan)</i> Patricia Campos <input type="radio"/> <i>(Campos Slogan)</i> Write in <input type="radio"/>
U.S. House of Reps. Two year term. (Vote for 1).	Robert Menendez, Jr. <input type="radio"/> <i>(Menendez Slogan)</i> Ravinder "Ravi" Bhalla <input type="radio"/> <i>(Bhalla Slogan)</i> Write in <input type="radio"/>
County Clerk Three year term. (Vote for 1).	Jerry Smith <input type="radio"/> <i>(Smith Slogan)</i> Write in <input type="radio"/>
Mayor Three year term. (Vote for 1).	Stuart Collins <input type="radio"/> <i>(Collins Slogan)</i> John E. Steinberg <input type="radio"/> <i>(Steinberg Slogan)</i> Write in <input type="radio"/>
Council Three year term. (Vote for 2).	Yvonne Chen <input type="radio"/> <i>(Chen Slogan)</i> Joanne Glading <input type="radio"/> <i>(Glading Slogan)</i> Ricardo Jones <input type="radio"/> <i>(Jones Slogan)</i> Write in <input type="radio"/> Write in <input type="radio"/>

Figure 2

OFFICE-BLOCK PRESENTATION WITH CONTESTS ABOVE

U.S. Senate Six year term (vote for 1)	Andy Kim <input type="radio"/> <i>(Kim Slogan)</i>
	Tammy Murphy <input type="radio"/> <i>(Murphy Slogan)</i>
	Patricia Campos <input type="radio"/> <i>(Campos Slogan)</i>
	Write in <input type="radio"/>
U.S. House of Reps. Two year term (vote for 1)	Robert Menendez, Jr. <input type="radio"/> <i>(Menendez Slogan)</i>
	Ravinder "Ravi" Bhalla <input type="radio"/> <i>(Bhalla Slogan)</i>
	Write in <input type="radio"/>
County Clerk Three year term. (Vote for 1).	Jerry Smith <input type="radio"/> <i>(Smith Slogan)</i>
	Write in <input type="radio"/>

Mayor Three year term. (Vote for 1).	Stuart Collins <input type="radio"/> <i>(Collins Slogan)</i>
	John E. Steinberg <input type="radio"/> <i>(Steinberg Slogan)</i>
Council Three year term (vote for 2)	Yvonne Chen <input type="radio"/> <i>(Chen Slogan)</i>
	Joanne Glading <input type="radio"/> <i>(Glading Slogan)</i>
	Ricardo Jones <input type="radio"/> <i>(Jones Slogan)</i>
	Write in <input type="radio"/>
	Write in <input type="radio"/>

40. Figure 1 demonstrates the layout and format that can be - and is - used in other states, such as Delaware and Pennsylvania, using the ES&S Voting System. It demonstrates how the current technology can create a grid-based ballot without requiring the “county line” layout currently in use in New Jersey.

41. Figure 2 similarly demonstrates the layout and format that can be developed in New Jersey voting systems using a grid-based ballot to mimic a more traditional office-block style (i.e., name of office/contest with all

candidates listed below) ballot which is used in an overwhelming majority of states.

42. Figure 1 is not unlike that already in use in Cherry Hill, NJ (Camden County) during the recent November 2023 general election (Note that with minimal edits in the current voting system, Cherry Hill, NJ could have made the ballot layout and format fit the layout and format demonstrated in Figure 2).

This Official General Election Sample Ballot is an exact copy of the Official General Ballot to be used on General Election Day. This ballot cannot be voted.

Este ejemplo es una copia idéntica de la Papeleta Oficial de las Elecciones Generales que será utilizada el día de las elecciones. Usted no podrá votar en esta papeleta.

OFFICIAL ELECTION SAMPLE BALLOT Muestra Oficial de la Papeleta
Tuesday, November 7, 2023 El Martes, 7 de Noviembre del 2023

Polls Open 6 A.M.-8 P.M.
Los Colegios Electorales estarán abiertos de 6 A.M. hasta las 8 P.M.

Cherry Hill Township
County of Camden

Joseph R. Pina
JOSEPH R. PINA, County Clerk
Brevetado del Condado

**OFFICIAL GENERAL ELECTION
BALLOT**
Papeleta Oficial Elecciones Generales
November 7, 2023 • 8th Legislative District
7 de Noviembre del 2023 • 8th Distrito Legislativo

INSTRUCTIONS TO VOTER
Use ONLY black or blue ink pen to mark your ballot.
This ballot may be used for all elections. For your ballot to count, fill in each column completely.
Correct Incorrect

1. To vote for candidates on this ballot, carefully fill in the oval next to the right of the candidate for each selection. Do not vote for more candidates than are to be elected to the office.
2. To vote for any person whose name is not printed on the ballot, write the name of such person opposite the proper title of office in the column designated "Write-in" and fill in the oval next to the right of this entry. Do not use printed names. If not filled properly your write-in vote will be void and not counted.
3. Do not make this ballot in any other manner than shown exemplified for your reader no exception. This ballot is torn, stained, discolored, incorrectly marked, folded or used other manner.

ANNUAL SCHOOL BOARD ELECTION BALLOT
Papeleta de las Elecciones Anuales de la Junta de Educación
Cherry Hill School District
Distrito Escolar de Cherry Hill

OFFICE TITLE TÍTULO DE OFICINA	WRITE-IN POR ESCRITO
1 <input type="radio"/> Members of Local Board of Education (Vote For Three) Miembros de la Junta de Educación Local (Vote por Tres)	<input type="radio"/> Write-in Escriba el nombre de la persona que desea votar
2 <input type="radio"/> Members of Local Board of Education (Vote For Three) Miembros de la Junta de Educación Local (Vote por Tres)	<input type="radio"/> Write-in Escriba el nombre de la persona que desea votar
3 <input type="radio"/> Members of Local Board of Education (Vote For Three) Miembros de la Junta de Educación Local (Vote por Tres)	<input type="radio"/> Write-in Escriba el nombre de la persona que desea votar
4 <input type="radio"/> Members of Local Board of Education (Vote For Three) Miembros de la Junta de Educación Local (Vote por Tres)	<input type="radio"/> Write-in Escriba el nombre de la persona que desea votar
5 <input type="radio"/> Members of Local Board of Education (Vote For Three) Miembros de la Junta de Educación Local (Vote por Tres)	<input type="radio"/> Write-in Escriba el nombre de la persona que desea votar
6 <input type="radio"/> Members of Local Board of Education (Vote For Three) Miembros de la Junta de Educación Local (Vote por Tres)	<input type="radio"/> Write-in Escriba el nombre de la persona que desea votar
7 <input type="radio"/> Members of Local Board of Education (Vote For Three) Miembros de la Junta de Educación Local (Vote por Tres)	<input type="radio"/> Write-in Escriba el nombre de la persona que desea votar

FIRE DISTRICT ANNUAL ELECTION BALLOT
Papeleta de la Elección Anual del Distrito del Fuego
Cherry Hill Fire District No. 13
Municipio de Cherry Hill, Condado del Condado N°13

OFFICE TITLE TÍTULO DE OFICINA	WRITE-IN POR ESCRITO
1 <input type="radio"/> Members of Board of Fire Commissioners (Vote For Three) Miembros de la Junta de Comisionados de Bomberos (Vote por Tres)	<input type="radio"/> Write-in Escriba el nombre de la persona que desea votar

OFFICE TITLE TÍTULO DE OFICINA	REPUBLICAN REPUBLICANO COLUMBIA	DEMOCRAT DEMOCRATA COLUMBIA	NOMINATION BY PETITION NOMINACIÓN POR PETICIÓN COLUMBIA	WRITE-IN POR ESCRITO
1 <input type="radio"/> Member of State Senate (Vote For One) Miembro del Senado Estatal (Vote por Uno)	<input type="radio"/> Mark DOOGAN	<input type="radio"/> James BEACH		<input type="radio"/> Write-in Escriba el nombre de la persona que desea votar
2 <input type="radio"/> Members of the General Assembly (Vote For Two) Miembros de la Asamblea General (Vote por Dos)	<input type="radio"/> Charles W. BARRY	<input type="radio"/> Louis D. GREENWALD	<input type="radio"/> Patricia R. LAMPITT	<input type="radio"/> Write-in Escriba el nombre de la persona que desea votar
3 <input type="radio"/> Members of the Board of County Commissioners (Vote For Three) Miembros de la Junta de Comisionados del Condado (Vote por Tres)	<input type="radio"/> James FANNING	<input type="radio"/> Louis CAPELLI, JR.	<input type="radio"/> Jonathan L. YOUNG, SR.	<input type="radio"/> Write-in Escriba el nombre de la persona que desea votar
4 <input type="radio"/> Mayor (Vote For One) Alcalde (Vote por Uno)	<input type="radio"/> Michael A. NANCE	<input type="radio"/> David FLEISHER		<input type="radio"/> Write-in Escriba el nombre de la persona que desea votar
5 <input type="radio"/> Members of Council (Vote For Three) Miembros del Consejo Municipal (Vote por Tres)	<input type="radio"/> David LODGE	<input type="radio"/> Monica GOKLOW	<input type="radio"/> Brian BAUERLE	<input type="radio"/> Write-in Escriba el nombre de la persona que desea votar
6 <input type="radio"/> Members of Council (Vote For Three) Miembros del Consejo Municipal (Vote por Tres)	<input type="radio"/> Just GIACOBONI RUSSO	<input type="radio"/> Stephen T. HEATH, JR.	<input type="radio"/> Jessica APELL	<input type="radio"/> Write-in Escriba el nombre de la persona que desea votar

ED/EV Cherry Hill

43. A copy of the above general election sample ballot is provided (also found in DE 95-1 Exh. D). The top of the sample ballot describes that it is “an exact copy of the Official General Ballot to be used on General Election Day.” According to the New Jersey Secretary of State Office, the in-person voting equipment used in Camden County in 2022 was the AVC Advantage

(Dominion Voting System). This, however, is likely inaccurate. The image of the sample ballot cannot be from the "AVC Advantage" because the AVC Advantage does not require a paper ballot - it is solely a touch screen computer voting system. The fact that there are timing marks (i.e., the black rectangles around the perimeter of the ballot) is proof that the image is of a paper ballot. Further, the instructions describe how to mark/fill-in the oval - which only happens on a paper ballot. For the AVC Advantage there is no need to mark/fill-in an oval as the voter is only required to make a selection by touching the name of the candidate on screen. Therefore, based on information provided in the Verifier. And lastly, the county's website has a photo of its current voting system, which is the ES&S DS300 scanner, which scans paper ballots.¹⁵ As is evident above, this ballot style layout and format is similar to that provided in Figure 2 above in that different races can be laid out across the ballot, and in that candidates can be decoupled from each other as they relate to different races. For example, the Cherry Hill ballot provides for a segregated display of contests and corresponding candidates in the School Board Election race on the upper-right corner of the ballot, even

¹⁵ <https://www.camdencounty.com/service/voting-and-elections/>

though it has been technologically laid out using grid-based ballot layout and format. This also reveals that contests can be decoupled from each other (i.e., arranged above, below, to the side of one another) on the ballot layout, as illustrated in Figures 1 and 2 above.

44. A ballot that appears like Figure 1 arises from Long Branch, NJ (Monmouth County) in May 2022, which is provided below (also found in DE 95-1, Exh. B):

Official Municipal Election

Tuesday, May 10, 2022, Monmouth County, New Jersey
Elección Municipal Oficial, martes, el 10 de mayo de 2022

City of Long Branch

Office Title Cargo	Nomination by Petition Nominación por Petición	Personal Choice Selección Personal
For Mayor Vote for One Para Alcalde Vote por Uno	John PALLONE <i>Long Branch First</i>	Write In Escriba
For Councilmembers At-Large Vote for Five Para Miembros en General del Consejo Vote por no más de Cinco	Mary Jane CELLI	Write In Escriba
	Lorenzo "Bill" DANGLER	Write In Escriba
	<i>Long Branch First</i> } Rose M. WIDDIS	Write In Escriba
	Mario R. VIEIRA	Write In Escriba
	Anita VOOGT	Write In Escriba

45. According to the New Jersey Secretary of State website, Monmouth similarly uses the AVC Advantage (Dominion Voting System). Similar to Camden County, however, the Secretary of State's website seems

to be incorrect. The Verifier describes Monmouth County as using the ES&S voting system in 2022. Further the Attorney General's Report confirms that Monmouth County used the ES&S voting system in 2022.¹⁶ Further, according to the video instructions that Monmouth County developed, it has used the ES&S voting system since 2021.¹⁷

46. Laying out both paper ballots and electronic ballot interfaces without the "county line" ballot layout and format using the ES&S voting system can be done without complication and without needing any software modifications.

REBUTTAL

47. The defendant submitted a Certification by Benjamin Swartz (DE46), the Principal State Certification Manager for ES&S, which claimed that "[b]oth EVS 6200 and EVS 6300 of the ES&S Express Vote XL system used in New Jersey were certified and tested using the current, traditional ballot layout style." By "traditional," I infer that he means the 'traditional New Jersey' style layout, which is a grid-based, party-column ballot (in the case of general

¹⁶ [https://www.nj.gov/oag/newsreleases23/2023-0906-Monmouth-County-Investigation-Investigative-Facts-Report-\(8-31-2023\)-\(With%20Exhibits\).pdf](https://www.nj.gov/oag/newsreleases23/2023-0906-Monmouth-County-Investigation-Investigative-Facts-Report-(8-31-2023)-(With%20Exhibits).pdf)

¹⁷ https://www.youtube.com/watch?v=l-t4_MHxLdU

elections) or “county line” style ballot (in the case of primary elections).

However, this is at best an imprecise use of the word “traditional,” because as described above, the traditional ballot layout used in an overwhelming majority of the country is the office-block style. Further, as described above, ES&S is currently laying out ballots in New Jersey using what I, and the vast majority of the country, refer to as a traditional office-block ballot (e.g., Sussex County 2020 Primary Election ballot¹⁸). ES&S also uses current technology to layout a grid-based ballot with a single column appearing like an office-block ballot (e.g., City of Long Branch Municipal Election ballot; also found in DE95-1, Exh. B), and a hybrid using a grid-based “county line” for some contests and a grid-based appearing like an office-block on other contests (e.g., Cherry Hill 2023 General Election ballot; also DE95-1, Exh. D). Additionally, the Swartz affidavit states “[d]epending on the ballot layout style requirements, any changes would require development, testing and certification of a new and/or updated version of software.”

48. Mr. Swartz implies that because the applicable versions of the ExpressVote XL system used in New Jersey were tested using the current,

¹⁸ <https://sussexcountyclerk.org/wp-content/uploads/2023/05/2023-June-Primary-Sample-ballots-for-web.pdf>

“traditional” (in his words) ballot layout style, *any* deviations from it would have to be retested and/or recertified. However, it is imperative to note the caveat he offers within his sentence: “[d]epending on the ballot layout style requirements.” The remedial actions the plaintiff is seeking uses the same ballot layout formats; it is solely reducing the number of columns in the ballot layout by consolidating multiple columns (e.g., Columns B, C, D, and E) into a single column (e.g., Column B) whereby all candidates that would be listed in the other columns (e.g., Columns C, D, and E) would be aggregated below the candidate(s) already listed in the respective column. For instance, in the example described, if there is one candidate in each of the four columns – listed side-by-side - they would be instead listed below equating to one column with four rows instead of one row with four columns. Such change would not require any modifications to the voting system. Such change would not require any modifications to the voting system software, firmware, or certification.

49. As a matter of fact, the ES&S EVS 6.3.0.0 voting system, including the same version of Electionware software and ExpressVote XL voting device

used in New Jersey, is certified in Pennsylvania¹⁹ and Delaware.²⁰ Neither Pennsylvania nor Delaware have laws that allow for “county line” style ballot layout – or what Mr. Swartz referred to as the “current, traditional ballot layout style” used in New Jersey. Therefore, it is inaccurate and incorrect to imply that the EVS 6.3.0.0 voting system cannot do a non “county line” style ballot layout.

50. Further, while neither Delaware nor Pennsylvania has certified the EVS 6.2.0.0 voting system, none of the modifications to the Electionware and ExpressVote XL pertain to anything that would impact the ability to switch from a “county line” style ballot layout to the Pennsylvania or Delaware style ballot layout (i.e., a non “county line” style ballot layout), as identified in the EAC’s EVS 6.3.0.0 voting system test report.²¹

¹⁹

<https://www.dos.pa.gov/VotingElections/Documents/Voting%20Systems/EVS6300/EVS%206300%20Report%20Final%20for%20website.pdf>

²⁰ According to a May 2023 report by an EAC accredited voting system test laboratory (VSTL) for North Carolina State Board of Elections, the EVS 6.3.0.0 is certified for use in Delaware. https://s3.amazonaws.com/dl.ncsbe.gov/State_Board_Meeting_Docs/2023-06-02/ES%26S%20EVS%206300%20Test%20Report-NC.pdf (Page 3)

²¹ The EAC Test Report for the EVS 6.3.0.0 Voting System lists all Software/Firmware Changes from the baseline system of EVS 6.2.0.0. https://www.eac.gov/sites/default/files/voting_system/files/ESS%20EVS6300%20Test%20Report%2002.pdf (Pages 8 and 9)

51. Additionally, the Certification of Warren County Clerk, Holly Mackey (DE57-1) discredits Mr. Swartz's allegation. Ms. Mackey stated that "[t]he ES&S system has the ability to technically allow a ballot design which is either based on a bubble ballot, a design referenced by Plaintiffs in their Complaint, or bracketing of candidates, including the use of a county organizational line ("organizational line") at the request of a county or local political party organization. In other words, the ES&S system can handle any style of ballot that I need it to." If in fact the ES&S system can handle any style, there is no need to recertify or retest the voting system certified by the Secretary of State and approved for use in New Jersey elections.

52. David Passante, co-owner of Royal Printing Service, filed a Certification (DE65-1) stating that Royal Printing Service provides "printing services for eleven counties for the purpose of administering New Jersey elections." Additionally, Mr. Passante mentions that he meets with those eleven counties "to review ballot design, make necessary changes, and ensure that the design is approved by and compatible with their voting machine vendor." Many of the tasks performed are not generally described as 'printing services;' rather, industry standard defines these tasks as 'ballot

programming' services, as described in the Certification of Nicole Nollette of Dominion Voting Systems (DE63-2).

53. Mr. Passante attests that the tasks his company performs for the eleven counties "permits our office to have "shell" ballots for each of our clients." Based on my understanding of Mr. Passante's description and my expertise in voting systems, ballot programming, including ballot design, layout, and generation, I infer that his use of the term "shell" is referring to a 'template.' Typically, when an election official or vendor begins the ballot programming process, a template from a previous election of similar type (e.g., Presidential Primary, Presidential General, Gubernatorial Primary, Gubernatorial General, etc.) is imported. Once the template is imported, the election official or vendor makes the necessary modifications to the ballot programming, design, and layout for the given election being programmed.

54. Furthermore, Mr. Passante states that it takes "three to four weeks in order to complete the ballot design process with the ten clerks we represent." Mr. Passante does not assert whether this three-to-four-week period is any different than the time it would take to generate for current "county line" style layout. Additionally, nothing precludes Mr. Passante from starting to create a 'template' for the ten counties at the current time. If this

Court allows the counties to use a grid-based layout with a single column, as shown in the example above, the current template could be used and then make minimal modifications to reduce the number of columns and increase the number of rows. Note that the number of columns and rows is dependent upon the number of candidates per contest and the random draw, so even with the reuse of a former template many of these modifications will need to be made regardless of style used.

55. While Mr. Passante stated that he is “concerned at this stage that any change in the ballot design will result in failure to meet the New Jersey statutory deadlines,” the Certification of Warren County Clerk, Holly Mackey, seems to dismiss Mr. Passante’s claim. Ms. Mackey states that “[a]s of March 2024, the practical effect is that the County of Warren can design a ballot that either contains bracketing, which may or may not include an organizational line, or a bubble ballot.”

CONCLUSION

56. Dominion Voting Systems (Dominion) and Election System and Software (ES&S) voting systems have the capability to create paper ballots for either in-person or vote by mail using the traditional office-block style ballot layout. Those voting systems are used throughout the country to develop

paper ballots for in-person and vote by mail and only a handful of states use a grid-based ballot layout. Therefore, the overwhelming majority of states use Dominion and ES&S voting systems for creating their ballots in the traditional office-block style. Further, as demonstrated, the New Jersey approved voting systems can lay out paper ballots using the grid-based ballot without implementing the “county line” format in a way that presents races as if they were office-block style.

57. All New Jersey approved voting systems using an electronic ballot interface (i.e., in-person touch screen voting), with the exception of the ExpressVote XL, can lay out the ballot display using the traditional office-block style ballot layout. Whereas the ExpressVote XL can only support a grid-based layout, the grid can be modified to visually display the electronic ballot interface without the “county line” format in a way that presents races as if they were office-block style.

58. The voting systems currently certified by the Secretary of State and approved for use in New Jersey elections do not need to be recertified or retested in order to have the capability to create either a paper ballot or electronic ballot interface without the “county line” format.

59. Ballots without the “county line” format will likely take less time for a county to conduct its ballot proofing, as well as to conduct logic and accuracy testing. Ballots with all candidates in a single row or column are less complicated, and therefore more likely to catch any errors or mistakes; the eye naturally follows the candidates being grouped together for the same office, as opposed to having to confirm that a specific candidate is in the appropriate column or row. This will save counties time and resources for pre-election preparation and testing.

Dated: March 13, 2024

Ryan Macias

APPENDIX 1 – MACIAS CV

Ryan Macias

RSM Election Solutions LLC

(E) Ryan@RSM Election Solutions.com (P) 805.345.9050

Professional Profile

Advising, strategizing, and developing policy for over 18 years with a proven record of significant, successful contributions in election administration, election infrastructure, technology security, and standards development both within the U.S. and abroad.

Experience

RSM Election Solutions LLC– Election Technology & Cybersecurity Consultant/Owner: (05/2019 – Present)

Develop methodologies and strategies for evaluating critical products, assets, and appliances used to secure critical infrastructure, with emphasis on election infrastructure technologies.

Assess the needs of United States (U.S.) and international government entities, particularly election authorities, in procuring and implementing cybersecurity infrastructure projects.

Provide expert research, analyses, and recommendations on U.S. funding of international government entities, such as U.S. Agency for International Development (USAID) funded projects for securing democratic institutions around the world.

Audit the resiliency and cybersecurity of major critical infrastructure projects to identify risk, estimate the impact, and assess the value added.

Advise election officials on process, procedures, rules, and regulations to address changes in election technology infrastructure and election administration.

Testify, provide oral testimony, written declarations, and consultation on election technology and security litigations and hearings in state and federal courts.

Lafayette Group Inc.– Subject Matter Expert (SME), Election Security: (05/2019 – Present)

Strategize, advise, and provide stakeholder engagement to the Election Security Resilience (ESR) subdivision at Cybersecurity and Infrastructure Security Agency (CISA).

Lead SME for election technology and security, including cybersecurity of election technologies, incident response of election infrastructure breaches, disclosure of vulnerabilities, and identification of best practices for mitigative measures to the election infrastructure.

Develop and train election infrastructure stakeholders on election security, including cyber hygiene best practices, phishing, ransomware, reducing operation risk by using secure practices, and mitigating risks of insider threat.

U.S. EAC– Acting Director, Testing & Certification (03/2019 – 05/2019)

Managed the development of publications and trainings for stakeholders on election technology and cybersecurity.

Served as the U.S. Election Assistance Commission (EAC) lead on critical infrastructure issues.

Lead to the [Technical Guidelines Development Committee](#) (TGDC) a federal advisory committee encompassing experts in the field of security, accessibility, standards development that advise on the development of HAVA compliant election technology principles, guidelines, and standards.

Collaborated with state and local election officials implementing new legislation, rules, regulations, and standards for election infrastructure.

Developed strategies and methodologies for balancing security with accessibility in election technology in compliance with the Help America Vote Act (HAVA) 2002.

U.S. EAC– Sr. Election Technology Program Specialist (05/2016 – 05/2019)

Engineered a new strategic approach for federal certification of voting systems, restructuring internal policies, processes, and procedures - focusing on the auditing and conformance to international standards for security, quality assurance, and configuration management.

Transformed the scope of voting system standards to implement a functional process-based model providing adaptability across multiple election technologies.

Project Manager for federal voting system certification - analyzing voting systems to determine conformance with federal standards, policies, and procedures.

Developed nationally recognized publications and trainings on the best practices for securing, procuring, and implementing election technology; many of which have been referenced in technical or policy related publications.

Implemented a risk-based approach to analyze and identify current threats and challenges in election technology, particularly regarding cybersecurity and information operations.

California Secretary of State– Sr. Election Technology Analyst (08/2006 – 05/2016)

Collaborated with legislators, election officials, and special interest groups to develop legislation, regulations, and policies for election systems including the [California Voters Choice Act](#), [California Voting System Standards](#), and [remote accessible vote by mail systems](#) legislation and standards.

Advise the Secretary of State and Executive Staff on the certification and implementation of election technologies, such as voting systems and remote accessible vote by mail technologies to ensure that all voters have an opportunity to vote privately and independently.

Professional Organizations & Committees

Member – [National Task Force on Election Crises](#)

Member - [GCA Cybersecurity Toolkit](#) for Elections Advisory Group

Program Committee Member – [E-Vote-ID](#): International Conference for Electronic Voting

Steering Committee Member for the Center for Internet Security (CIS) [Rapid Architecture-Based Election Technology Verification \(RABET-V\)](#)

Former State of California appointee to the [U.S. EAC's Standards Board](#)

Education & Professional Certifications

Bachelor of Science, Business Administration (Finance) – California State University, Sacramento

Certified Election/Registration Administrator (CERA)

Lead Auditor - ISO 9001 & ISO 17025

Certified as a Protected Critical Infrastructure Information (PCII) Authorized User

Projects & Publications

- EXPERT WITNESS on behalf of the Secretary of the Commonwealth of Pennsylvania: Fulton County, Pennsylvania, et al., v. Secretary of the Commonwealth in the Commonwealth Court of Pennsylvania, Case #277 MD 2021 No. 3 MAP 2022 as identified in the [MEMORANDUM OPINION BY PRESIDENT JUDGE COHN JUBELIRER](#)
- EXPERT WITNESS on behalf of the Secretary of the Commonwealth of Pennsylvania: No. 3 MAP 2022 Appeal from the Order of the Commonwealth Court at No. 277 MD 2021 dated January 14, 2022, in the Supreme Court of Pennsylvania Middle District, Case # J-46-2022 as identified in the [OPINION by Justice Wecht](#)
- [EXPERT WITNESS on behalf of Arizona Secretary of State Katie Hobbs](#): Jeanne Kentch, et al., v. Kris Mayes, et al., in the Superior Court of Arizona, Mohave County, Case #CV-2022-01468
- [EXPERT WITNESS TESTIMONY on behalf of Arizona Secretary of State Katie Hobbs](#): Kari Lake v. Katie Hobbs, et al., in the Superior Court of Arizona, Maricopa County, Case #CV 2022-095403
- [DECLARATION on behalf El Paso County](#): Timothy J. Kirkwood and Paul T. Prentice v. Board of County Commissioners, El Paso County, et. al. in the District Court of Colorado, Case #2022CV
- EXPERT WITNESS TESTIMONY on behalf of the Secretary of the Commonwealth of Pennsylvania: Fulton County, Pennsylvania, et al., v. Secretary of the Commonwealth in the Commonwealth Court of Pennsylvania, Case #277 MD 2021 as identified in [REPORT CONTAINING PROPOSED FINDINGS OF FACT AND RECOMMENDATIONS CONCERNING THE SECRETARY OF THE COMMONWEALTH'S APPLICATION FOR AN ORDER HOLDING THE COUNTY OF FULTON, ET AL, IN CONTEMPT AND IMPOSING SANCTIONS](#)
- AFFIDAVIT (second) on behalf of the Secretary of the Commonwealth of Pennsylvania: Fulton County, Pennsylvania, et al., v. Secretary of the Commonwealth in the Commonwealth Court of Pennsylvania, Case #277 MD 2021.
- [EXPERT WITNESS TESTIMONY on behalf of Arizona Secretary of State Katie Hobbs](#): Kari Lake, et al. v. Katie Hobbs, et al., in the United States District Court for the District of Arizona, Case #2:22-cv-00677
- [AFFIDAVIT on behalf of the Secretary of the Commonwealth of Pennsylvania](#): Fulton County, Pennsylvania, et al., v. Secretary of the Commonwealth in the Commonwealth Court of Pennsylvania, Case #277 MD 2021.
- [DECLARATION on behalf of Secretary of State's Motion to Intervene](#): Arizona Democratic Party and Steve Gallardo v. Karen Fann et al., Superior Court of the State of Arizona for the County of Maricopa County, Case #CV-2021-006646.
- [Rebuttal Report](#) to the Allied Security Operation Group (ASOG) Antrim Michigan Forensics Report.
- [Election Security Risk in Focus: Ransomware](#) – Trained hundreds of election administrators on the cybersecurity risks and mitigative measures related to ransomware in the election infrastructure.
- [MEMORANDUM in Opposition re13 MOTION for Preliminary Injunction](#): Harley et al v. Kosinski et al, United States District Court in the Eastern District of New York, Case #1:20-cv-04664.

- [MEMORANDUM in Opposition re26 MOTION for Preliminary Injunction](#): Taliaferro et al v. North Carolina State Board of Elections et al, United States District Court for the Eastern District of North Carolina Western Division, Case #5:20-cv-00411.
- [Election Security Risk Profile Tool](#) – Collaborator on the methodology for a simple, non-technical tool that provides mitigations for the non-cybersecurity professionals to understand.
- Co-Author of the Harvard Belfer Center Defending Digital Democracy Project (D3P) [State and Local Election Cybersecurity Playbook](#) and [The Elections Battle Staff Playbook](#).
- Trainer and scenario builder for the D3P [State and Local Election Official Tabletop Exercise](#) and [Battle Staff Bootcamp](#).
- Contributor to CIS [A Handbook Election Infrastructure Security](#) and [Election Technology Procurement Guide](#).
- Lead on [EAC Voluntary Voting System Guidelines v. 2.0](#) focusing on providing technologies that are both secure and accessible.
- Created the 17-Functions process model that defined the [Scope of the VVSG 2.0](#) so that non-traditional election technologies could be tested to the same standards as traditional voting systems.